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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/430,052

10/29/1999

MATTHEW T. CRISFIELD

5010/099

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32827

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11/18/2003

DUFT SETTER OLLILA & BORNSSEN LLC

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BOULDER, CO 80302

EXAMINER

MARTIR, LILYBETT

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/430,052

Applicant(s)

CRISFIELD ET AL.

Examiner

Lilybett Martir

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on August 29, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 30
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cage et al. (Pat. 4,876,898) in view of Lew et al. (Pat. 5,663,509).

- With respect to claim 1, Cage et al. teaches a first flow tube as in element 11 having an inlet end and an outlet end, a second flow tube as in element 11' having an inlet end and an outlet end, a driver as in element 16, affixed to said first flow tube at a point on said first flow tube; that is substantially perpendicular to a bending axis of said second flow tube, wherein said driver oscillates said first flow tube and said second flow tube in opposition to each other (Col. 6, lines 36-41); a first brace bar as in element 15 affixed to said first flow tube proximate said inlet end of said first flow tube and affixed to said second flow tube proximate said inlet end of said second flow tube; a second brace bar as in element 15, affixed to said first flow tube proximate said outlet end of said first flow tube and affixed to said second flow tube proximate said outlet end of said second flow tube; and sensors that are pick-offs as in elements 17 and 18 and sensors as in elements 17 and 18, affixed to said first flow tube in a position that allows detection, said sensors being

pick-offs in a position that allow said pick-off sensors to a desired amount of Coriolis force at a low amplitude vibration (Col. 7, lines 30-39) as noted in Figure 1. Cage et al. fails to teach the first and second flow tube forming *substantially* a semicircle that begins at said inlet end of said second flow tube and ends at said outlet end of said second flow tube, even though he suggests the utilization of different shapes in the flow tubes without departing from the scope of his invention (Col. 13, lines 27-48). Lew et al. teaches a Coriolis or convectible inertia force mass flow meter that comprises first and second flow tubes as in elements 44 and 45 forming *substantially* a semicircle that begins at the inlet end of said flow tubes and ends at said outlet end of said flow tubes as noted in Figure 5. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the Coriolis mass flow rate meter of Cage et al. utilizing the teachings of the Coriolis or convectible inertia force mass flow meter by shaping the tubes so that they form *substantially* a semicircle that begins at the inlet end of said flow tubes and ends at said outlet end of said flow tubes therefore making said device and the measurements made by it more accurate, versatile, and capable of fitting in smaller or limited spaces.

- With respect to claim 2, Cage et al teaches an inlet manifold as in element 12, affixed to said inlet end of said first flow tube 11 and said inlet end of said second flow tube 11' to affix said first flow tube and said second flow tube to a pipeline as noted in Figure 2.

- With respect to claims 3 and 5, Cage et al. teaches a *substantially* 90 degree bend in a flow path through said inlet and outlet manifolds 12 (Note the bend in the flow path going from element 12 to elements 11 and 11" in Figure 1, Col. 13, lines 35-41).
- With respect to claim 4, Cage et al. teaches an outlet manifold as in element 12 in the R side, affixed to said outlet end of said first flow tube and said outlet end of said second flow tube to affix said first flow tube and said second flow tube to a pipeline as noted in Figure 1 (Col. 6, lines 23-28).
- With respect to claim 6, Cage et al. teaches an inlet manifold as in element 12 in the L side, affixed to said inlet end of said first flow tube and said inlet end of said second flow tube to affix said first flow tube and said second flow tube to a pipeline; an outlet manifold as in element 12 in the R side, affixed to said outlet end of said first flow tube and said inlet end of said second flow tube to affix said first flow tube and said second flow tube to a pipeline; and a spacer as in element 13, affixed to said inlet manifold and said outlet manifold to maintain a fixed distance between said inlet manifold and said outlet manifold (Col. 6, lines 18-30).
- With respect to claim 10, Lew et al fails to teach the position of said pick-off sensors is substantially 20-50 degrees from said bending axis of said first and said second flow tube. Since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art (In re Aller, 105 USPQ 233) and since it has been held that rearranging parts of an invention involves

only routine skill in the art (In re Japikse, 86 USPQ 70), it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of Lew et al. by rearranging the pickoff sensors of Wenger et al. pick-off sensors in a selected angle relative to said first and second flow tubes for the purpose of detecting the greatest or more convenient amount of Coriolis forces caused by the flowing material.

- With respect to claim 11, Lew et al. fails to teach the position of said pick-off sensors is 30 degrees from said bending axis of said first and said second flow tube. Since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art (In re Aller, 105 USPQ 233); and since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of Lew et al. by rearranging the pickoff sensors of Wenger et al. pick-off sensors in a selected angle relative to said first and second flow tubes for the purpose of detecting the greatest or more convenient amount of Coriolis forces caused by the flowing material.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cage et al. in view of Lew et al. as applied to claims 1 and 6, and further in view of Wenger et al. (Pat. 5,394,758).

- With respect to claim 7, Cage et al. teaches a spacer 13 having an inlet end affixed to said inlet manifold as in element 12 in the L side; an outlet end

affixed to said outlet manifold as in element 12 in the R side, and openings through said top side of said spacer through which said first flow tube and second flow tube are affixed to said inlet manifold and said outlet manifold as noted in Figures 1 and 2 (Note the connection between element 13 and elements 11 and 11' as depicted in said figures). Cage et al. fails to disclose a top side, a bottom side, a front side, and a back side of the spacer each extending between said inlet end of a spacer and said outlet end of said spacer to specifically form a rectangular body. Wenger et al. teaches a top side, a bottom side, a front side, and a back side each extending between said inlet end of a spacer and said outlet end of said spacer to form a rectangular body (Note that in Fig. 2, element 13 exhibits all of these features). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of Cage et al. as modified by Lew et al. by further utilizing the teachings of Wenger et al. in order to provide Cage et al. with a rectangular spacer body that extends between the inlet and the outlet of the device, to maintain a constant distance between the inlet manifold and the outlet manifold as is also done by Cage's element 13 of the flowmeter utilizing a specific shape for said spacer body to therefore improve the accuracy and reliability of the desired flow measurements, and capable of fitting in smaller or limited spaces .

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cage et al. in view of Lew et al. and Wengger et al. as applied to claim 7 above, and further in view of Cae et al. (Pat. 4,895,031).

- With respect to claim 8, Cage et al. as modified fails to teach a casing that encloses said first flow tube and second flow tube affixed to said top side of said spacer, even though he teaches the utilization of a housing 14. Cage et al. (Pat. 4,895,031) teaches a coriolis mass flow rate sensor as in element 10 that has a housing as noted in Figures 1 and 5 which is fixed to top of the spacer 12. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of Cage et al. utilizing the teachings of Cage et al. (Pat. 4,895,031), to further protect the sensor from the atmosphere that surrounds it thereby minimizing any impact on it's measurement performance by only attaching the housing to the sensing arrangement through the spacer, and also by reducing the size of the housing making it capable of fitting in smaller or limited spaces.

#### ***Allowable Subject Matter***

5. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, or if the limitations on said claim are inserted I the base claim, including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

6. Applicant's arguments filed August 29,2003 have been fully considered and they raised issues that made necessary the new art to be applied and therefore, the arguments presented against Lew et al. are said to be moot due to the new grounds of rejection.

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***Conclusion***

7. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (703)305-6900. The examiner can normally be reached on 9:00 AM to 5:30 PM.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703)305-4816. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3432 for regular communications and (703)305-3432 for After Final communications.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Lilybett Martir  
Examiner  
Art Unit 2855

RCM  
November 12, 2003

  
EDWARD LEFKOWITZ  
SUPERVISORY PATENT EXAMINER  
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